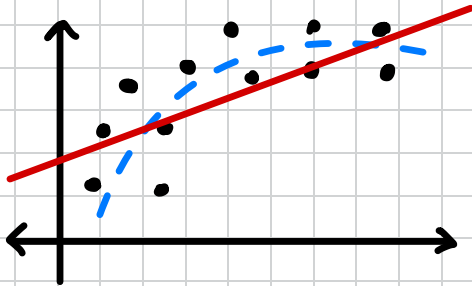


## Bias:

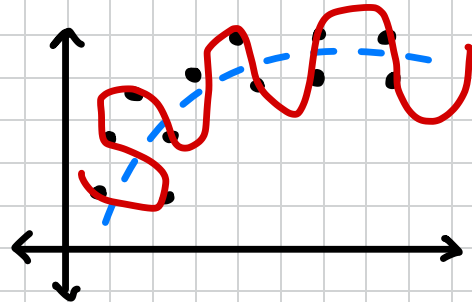
Inability of ML methods to capture true relationship is called bias



— Linear regression

— Ideal model

- High bias as model is linear but the relationship is not



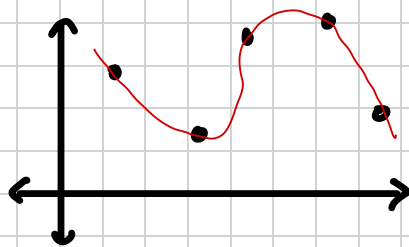
— Complex model

— Ideal model

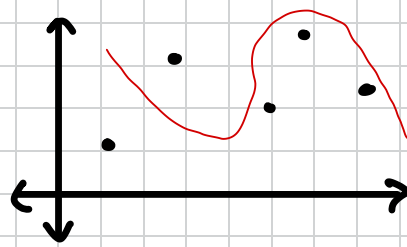
- Low bias as model catches all the points.

## Variance:

Difference in fits between datasets is var

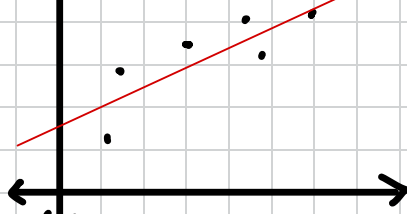
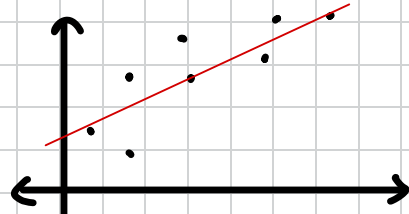


Training set



Testing set

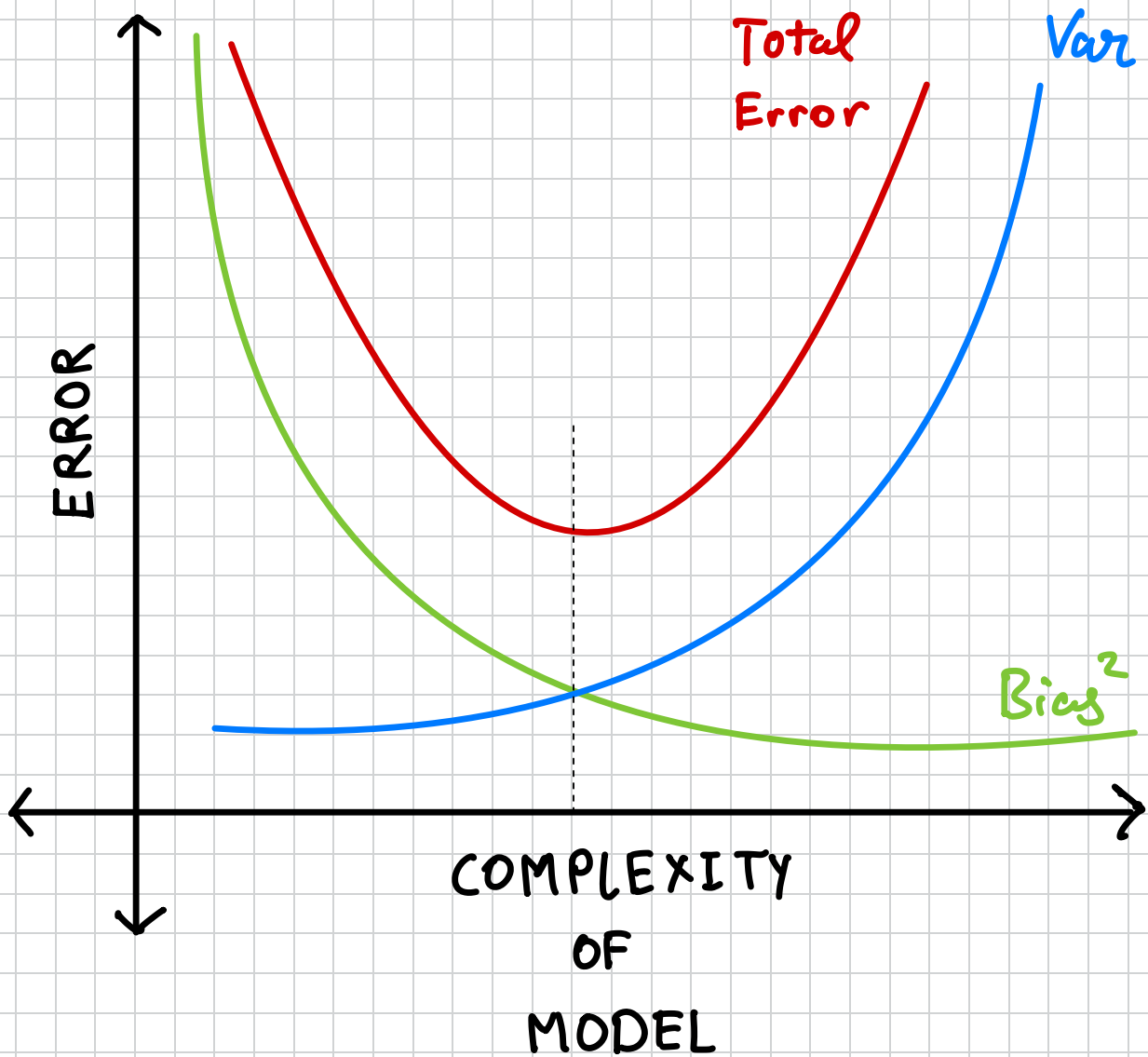
High variance



Low variance

Three commonly used methods for spotting simple and complicated models:

1. Regularization
2. Boosting
3. Bagging



## Practical Application:

Its easy to say when error % has a high difference. What if:

Train error = 15%.

Test error = 16%.

Q. Is this a good model?

A. To check if the model is good or not we compare it with % human error.

Eg.) If a human have 20% error rate then the proposed model is great

If a human have 2% error rate then the proposed model has high bias i.e. underfitted model

∴ Cross check with human error to find base line for model